

Trade and Peace: A Game-Theoretic Analysis

by

Brett V. Benson
Duke University
bvb@duke.edu

and

Emerson M. S. Niu
Duke University
niu@duke.edu

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ABSTRACT

Most of the contemporary policy debate regarding the interdependence of trade and peace has focused on devising responses either in favor of or in opposition to the long prevailing notion that trade is positively and unconditionally correlated with peace because trading partners fear that conflict will result in the loss of welfare gains from trade. The China and Taiwan case – noteworthy for the simultaneous presence of healthy trade flows and an adversarial political relationship -- provides an interesting counter-example to the leading positions in the literature. Our model expands the domain of the trade-peace analysis by endogenizing both trade and conflict and analyzes the trade-peace interaction strategically, because states' decisions to trade are a function, not only of their own utility, but also of their perception of the likelihood that their prospective trade partner will initiate a conflict; and decisions to initiate a conflict depend, not only on utility calculations, but also upon states' perceptions of the likelihood that the target will concede.

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I. Introduction

For the past decade, trade between China and Taiwan has increased at an impressive rate. According to estimates from Taiwan's Ministry of Economic Affairs, total trade between China and Taiwan totaled over \$40 billion, representing approximately 16.9% of Taiwan's total trade and 6.2% of China's total trade. At a glance, the trade relationship between China and Taiwan appears to exhibit expected trends for trade partners that are in close geographical proximity to one another, have complementary comparative advantages, and share a common language and sociocultural roots. However, China and Taiwan are also political adversaries, and lurking behind the growing cross-strait trade relationship lies a dispute over the official status of Taiwan's sovereignty that threatens to erupt into a military crisis. A 1995 independent task report sponsored by the Council on Foreign Relations observed that tensions between China and Taiwan threaten the stability of the entire Asia-Pacific region and constitute one of the highest national security concerns of the US.¹ The warnings of this task report were nearly realized in late 1995 and early 1996 when China launched a series of missile and amphibious exercises in areas near Taiwan in an attempt to influence the outcome of Taiwan's presidential election. The conflict escalated to a near crisis in March 1996 when Chinese missiles landed dangerously close to Taiwan's shore and the US positioned two aircraft carrier battle groups near Taiwan. Although the confrontation subsided after Taiwan's election was decided, the underlying tensions of the 1996 Taiwan Strait missile crisis persist unabated to the present time.

¹ *Managing the Taiwan Issue: Key is Better U.S. Relations with China*, Report of an Independent Task Force, Sponsored by the Council on Foreign Relations, 1995.

Many wonder how trade and conflict between China and Taiwan will interact to affect the tenuous status quo in the Taiwan Strait. Some have optimistically suggested, for example, that increases in cross-strait commerce and contacts will help bring about the democratization and liberalization of China.² However, if cross-strait trade should promote peace, then why does the prospect for peace seem as unlikely, if not more unlikely, to occur today in the midst of booming cross-strait commerce than it did 20 years ago when trade between China and Taiwan comprised less than 1% of today's trade flows?

The position, however, that appears to be gaining the most momentum, claims that the trade relationship between China and Taiwan places Taiwan in a politically vulnerable position with respect to China and may threaten Taiwan's national security. During former President Lee Teng-hui's administration, Taiwan restricted trade with China to try to prevent becoming too economically dependent and politically vulnerable. In 1996, President Lee introduced the "patience-over-haste" (jie-ji-yong-ren) investment policy. The policy prohibits some forms of mainland investment altogether, bans major infrastructure projects, and limits Taiwanese investment in the mainland to 20-30 percent of total investments, and requires that Taiwan businesses not make single project investments in excess of \$50 million. Taiwan does not import mainland goods, which contributes to Taiwan's substantial trade surplus, and it forbids direct shipping and communication links with the mainland, so Taiwanese investors and traders must operate through third party outlets. Also under President Lee's administration, Taiwan initiated

² Both Presidents Lee and Chen have stated that the cross-strait trade can improve the prospect for peace. "Entire Mainland China May be 'Taiwanized': Lee," Central News Agency, June 24, 1999; and Jason Blatt, "Chen Hoping [Information Technology] Can Help Bridge Strait," *South China Morning Post*, June 13, 2000. Both quoted in Bolt, 85.

the “go south” strategy to stall the mass exodus of Taiwan businesses to mainland by offering incentives for Taiwan businesses to invest in Southeast Asia instead. Proponents of the economic dependence position point to cross-strait trade and investment asymmetries to support their concern that Taiwan is becoming too economically dependent upon China.³ Taiwan’s Ministry of Economic Affairs estimates that Taiwan’s total trade with China has been rapidly growing as a percentage of its total trade for the past decade (from around 6% in 1991 to 16.9% in 2002), but China’s total trade with Taiwan steadily represents only around 6-8% of its total trade. Noticeably, the growth of Taiwan’s exports to China as a ratio of its total exports nearly tripled from 9.1% in 1991 to 25.3% in 2002.

Those who believe that Taiwan is becoming dangerously dependent upon China also cite Taiwan’s growing foreign direct investment in mainland based projects, because foreign investment tends to involve more risk since traders can often find substitutable markets while investors stand to lose their investments in the event of a sudden interruption of cross-strait commerce. Mainland China is by far Taiwan’s largest and fastest growing target for foreign investment. Taiwan’s Ministry of Economic Affairs estimates that Taiwan’s approved cumulative outward investment in mainland China through January 2003 represented 44.53% of its total approved foreign investment of US\$63.36 billion. British Central America, Taiwan’s next largest destination for foreign investment, which is structured as a tax haven for Taiwanese investors, represents, as a ratio of total foreign investment, less than half the amount of investment directed to mainland China (20.17% compared to 44.53%).

³ See, for example, Dent 2001, Jefferson 2000, and Ping Deng 2000.

Heavy cross-strait trade and the increasing amount of trade and investment directed to China as a percentage of Taiwan's total trade and investment causes many to worry about negative political and security externalities from becoming too dependent on mainland China for Taiwan's economic well-being. However, if political exploitation or potential conflict is likely to occur, then why does cross-strait trade and investment continue to increase? The simultaneous presence of a healthy trade relationship and a perilous adversarial political relationship between the same two political entities evokes some interesting general questions about the correlation between trade and peace.

Contributors to the trade-peace literature analyze international trade relationships to discover whether or not trade is more or less likely to bring about peace.⁴ Most of this literature has been a response to the long-standing liberal position, which generally argues in support of some rendition of the following basic proposition: trade encourages peace because it leads to social and/or economic interdependence. Social interdependence occurs because trade increases communication, a convergence of economic interests, and the establishment of cultural ties that promote relationships of trust and respect between trading partners that will prevent them from resorting to forceful means to resolve disputes (Deutsch, et al. 1957; and Deutsch 1968).

Economic interdependence results from trade partners' mutual emphasis on maximization of gains from trade, which will be lost if conflict interrupts the trade relationship (Polachek 1980, Rosecrance 1986, and Copeland 1996). From this standpoint, conflict is viewed as a kind of tariff on trade prices, driving import prices up

⁴ For reviews of this literature, see Mansfield and Pevehouse 2000, Barbieri and Schneider 1999, and McMillan 1997. See Morrow 1999 for an analysis about how trade might be irrelevant to the prospect for peace or conflict.

and export prices down (Polachek, 1980).⁵ As the level of trade increases, the cost of conflict also goes up. Optimizing trade partners, therefore, will be less willing to initiate a conflict or increase existing levels of conflict, because, as trade increases, the marginal cost of conflict also increases resulting in a decrease in the marginal benefit of more hostility. That is, less interdependent countries will derive greater utility from conflict because their marginal costs are lower due to lower import and export levels. However, as countries trade more and become more interdependent, then there is more at stake in terms of welfare gains lost when conflict increases the cost of trade and ultimately threatens the cessation of trade altogether. The case of China and Taiwan, however, contradicts the liberal position, because increases in trade have failed to obtain the predicted outcome. Instead of improving the prospect for cross-strait peace, today's high trade volume between China and Taiwan is accompanied by a highly volatile security situation.

The realist position, which is one of the major opponents of the trade-promotes peace proposition, claims that liberal arguments assume that states are exclusively motivated by the maximization of individual welfare gains, which, according to the liberal position, is better accomplished through mutual cooperation. If states' driving motivation is the maximization of absolute gains, then their primary obstacle is to discover and implement mechanisms through which incentives to cheating can be removed in order to maximize interstate cooperation.⁶ If, however, states are concerned

⁵ A later development of a similar expected utility model assumes instead that as conflict increases imports and exports go down. See Polachek, Robst, and Change, 1999.

⁶ The neoliberal literature pays especial attention to the merits of institutional mechanisms to facilitate compliance between self-interested states, which otherwise have an incentive to cheat because they interact without any central authority to enforce agreements. See Keohane, 1990; Axelrod and Keohane, 1985; Keohane, 1984; and Lipson, 1984.

also by the mutual threat posed to each other due to the systemic level struggle for power in the anarchical international community (Waltz, 1979), then states will be wary of any increase of the relative capabilities of any other state including relative gains from trade (Grieco, 1988; Gowa, 1994; and Waltz, 1979).

To capture the effect of relative gains concerns, Grieco builds into trade partners' utility functions a negative payoff for gains from trade that favor another state disproportionately. The implication is that states should be unwilling to trade with political adversaries when gains from trade accrue such that one's enemy benefits disproportionately. However, as James Morrow has pointed out, counter-examples to the realist position exist because political adversaries will, under certain conditions, remain in asymmetrical trade relationships (Morrow, 1997). The case of China and Taiwan, for example, stands as one such counter-example to the realist position, because cross-strait trade has grown impressively for the past 20 years in spite of significant gaps in trade flows and the security risk posed by the adversarial political relationship between China and Taiwan.

The majority of the debate over the relationship between trade and conflict has, especially in recent years, been waged on empirical grounds.⁷ Empirical studies have produced a range of results, but have mostly concentrated on the central but contradictory findings that either trade positively (Barbieri 1996) or negatively (Oneal and Russett 1997) affects the prospect of conflict. One consistent pattern for studies searching to explain the effect of trade on peace is to treat trade exogenously and to neglect the impact of peace or conflict on trade. Brian Pollins (1989a) observed this tendency in the literature and set out to discover what, if any, impact political considerations have on

⁷ For a survey of empirical studies of the trade-conflict relationship, see Barbieri and Schneider 1999, 395.

nations' decision to engage in trade. He concludes that traditional security concerns, as well as economic welfare objectives, influence the international trade system.⁸ Morrow et al. (1998) also show that trade depends upon the nature of the political relationship between prospective trading nations. Moreover, their study asserts that actual disputes do not have any direct effect on trade, because trading nations anticipate the likelihood of conflict and adjust their economic activities accordingly.⁹

The importance of this insight cannot be overemphasized, because the trade-conflict debate overlooks the strategic nature of the relationship between trade and conflict, in which rational forward-looking states try simultaneously to maximize political and economic objectives based upon their perception that their prospective trade partner will or will not be peaceful. Instead, theoretical work takes trade as given and then generates a decision-theoretic analysis to determine the effect of trade on conflict. Consequently, empirical studies focus exclusively on trading states, thereby introducing a selection bias by neglecting to include states that would otherwise trade but for possibility of conflict. It is no surprise, then, that researchers, especially liberals, should find correlations between trade and peace, because most observations in such empirical studies will include trading states that believe peace with their trade partner will continue to prevail.

Alastair Smith (1998) has pointed out the inadequacy of conventional statistical tests to estimate strategic interactions because of the interdependence of variables and the failure to consider counterfactual examples of unrealized opportunities. Most trade-peace studies are susceptible to this criticism, because decisions to trade and enter into a

⁸ Pollins also emphasizes the importance of political factors in another article. See Pollins 1989b.

⁹ Morrow reaffirms this claim in his 1999 article.

conflict are interrelated and failure to treat trade endogenously excludes non-trading states from consideration. The behavior of the non-trading states, however, is valuable if the interaction is strategic and states have an incentive to use decisions to trade or not to trade as signals to secure political or economic objectives. That is, a rational, forward-looking state may choose not to trade if it worries about security concerns more than economic welfare and perceives that its potential trade partner is also a political adversary and a potential security threat. On the other hand, states that chose to trade may do so because they perceive that peaceful relations are likely to continue or that economic or political benefits can be derived from trade with the enemy.

Decisions to trade, therefore, can be a function of maximizing economic and/or political utility. Albert Hirschman (1945/1980) intuited that states may undertake trade for political as well as economic reasons. That is, states may choose to pursue trade policies to foster economic dependence of political adversaries that would thereby advance one's own political objectives. Relationships of economic dependence and political dominance can occur when states adopt politically motivated trade strategies that would create a commercial environment in which the target state would have difficulty adjusting in the event that the trade relationship suddenly changed, such as creating investment opportunities and a trade market for the target state that represents a substantial percentage of the targets total trade and investment and that is difficult to reproduce elsewhere in the event of an abrupt interruption of the existing trade relationship.

Hirschman's intuition pertains to the China-Taiwan case, for many in Taiwan fear that China's cross-strait trade policies reflect the kind of strategic, politically motivated

maneuvering meant to bring about Taiwan's economic dependence and China's political dominance. Indeed, in the China-Taiwan case, Chinese leaders have made no secret about their intention to provide incentives for Taiwan investment and trade in the mainland in order to bring about Taiwan's economic dependence and political vulnerability. As early as 1985, a Chinese Communist Party United Front Department document made the following statement: "... we can definitely, step by step, lead Taiwan's industries to rely on our market as long as we adopt well-organized and well-guided measures. Continuing to develop these efforts would effectively lead us to control the operation of Taiwan's economy that would speed up the reunification of the motherland."¹⁰ And, according to Qian Qichen, Beijing's strategy has been "to blockade Taiwan diplomatically, to check Taiwan militarily, and to drag along Taiwan economically."¹¹

Hirschman's valuable insight underscores the significance of the interrelationship between political and economic factors in examples like the China-Taiwan case, for, contrary to the traditional liberal view, a state primarily motivated by its political objectives may use trade to coerce its trade partner and, depending upon the effectiveness of the coercer, the target state may make political concessions in order to sustain the trade relationship. However, Hirschman assumes that trade asymmetries translate into resolve, which implies that in an asymmetrical trade relationship the less economically dependent state will have more political resolve while the more economically dependent state will be less politically resolute. Thus, if China's economic policies with respect to Taiwan are

¹⁰ Hsin-hsing Wu, *Bridging the Strait: Taiwan, China, and the Prospects for Reunification* (Hong Kong: Oxford University Press, 1994), 171. Quoted in Bolt 2001, 83.

¹¹ This is allegedly a direct quote taken by the Hong Kong media from Qian's speech at an undisclosed national working meeting among Taiwan affairs officials held in Fuchian (December 1993). Quoted in Chu 1997.

in fact motivated by its desire to achieve political concessions from Taiwan and if China successfully executes its policies such that Taiwan becomes heavily dependent upon China for its economic well-being, then, according to the logic of Hirschman's view, we should expect to observe Taiwan make political concessions to China in order to sustain cross-strait investment and trade flows.

Political resolve, however, is not just determined by trade asymmetries, and the coercer is not necessarily the only player with political resolve. Many factors contribute to give rise to the level of a state's resolve, and, states do not necessarily know the level of their trade partner's political resolve. A coercer likely does not know the type of its trade partner – whether its political resolve is high or low – and may, therefore, try to bring about the economic dependence and political vulnerability of a politically resolute target state. Indeed, the coercer may, in fact, be less resolved than the target state, in which case we would not expect to observe the target state easily concede even if it is heavily dependent upon trade with the coercer.

In the following, we present a model that analyses the conditions under which states will likely trade and enter into a conflict with each other. Our model considers trade endogenously and the trade-peace interaction strategically, because states' decisions to trade are a function, not only of their own utility, but also of their perception of the likelihood that their prospective trade partner will initiate a conflict; and decisions to initiate a conflict depend, not only on utility calculations, but also upon states' perceptions of the likelihood that the target will concede. We build on the intuition offered by Albert Hirschman, which suggests that political as well as economic considerations enter into states decisions to trade and coerce, and include the realistic

assumptions that players' resolve may range from strong preferences for economic gains to strong preferences for political gains and states are unlikely to know the level of their trade partners political resolve. The present study, therefore, undertakes to provide a study of the strategic logic that underlies the trade-conflict relationship, which is made interesting by the fact that players are trying to maximize political and economic goals but are constrained by their uncertainty about their opponent's goals and resolve. We develop a two-player game with incomplete information to capture the strategic interaction between dyads that face decisions to trade and initiate conflict with each other. The following model produces some interesting and original results that explain cases like the China-Taiwan example in which political adversaries in asymmetrical trade relationships continue to trade even in the face of conflict.

II. Trade-Peace Model

A general trade-conflict interaction consists of a series of moves in which both states choose whether to trade and enter into a conflict with the other player. If both players choose not to trade, then the game ends, because neither player can exploit the trade relationship for political gain. The interaction in question then focuses on cases in which at least one player chooses to trade. To simplify, we substitute general players with China and Taiwan and reduce the interaction sequence to include an opening move by player 1, in this case Taiwan, to liberalize or restrict trade, followed by a move by player 2, or China, which already welcomes trade and, if given a move, faces a decision whether or not to exploit the trade relationship and coerce Taiwan. If Taiwan chooses to leave existing trade regulations in place, then the status quo will persist. However, if Taiwan decides to liberalize trade with China, Beijing is then in a position to begin to try

to extract concessions from Taiwan. Peaceful economic integration occurs until China decides to coerce Taiwan, at which time Taiwan must decide if it will comply with China's threat to prevent an interruption in trade or if it will instead try to protect its security interests by refusing to comply. If Taiwan complies, then it loses the value of the political concession but maintains its economic gains. On the other hand, if Taiwan refuses to comply, then China must decide whether or not it will carry through with the threat and punish Taiwan. If not, then China and Taiwan continue to trade. If, however, China punishes Taiwan, then trade is interrupted and both suffer opportunity costs to lost trade. The sequence of moves in this interaction is as follows (See Figure 1):

Taiwan: (Liberalize Trade / Restrict Trade)

China: (Coerce / Not Coerce)

Taiwan: (Comply / Not Comply)

China: (Punish / Not Punish)

There are five possible outcomes to this game:

O1: (Status Quo)

O2: (Taiwan liberalizes trade, China does not coerce)

O3: (Taiwan liberalizes trade, China coerces, and Taiwan complies)

O4: (Taiwan liberalizes trade, China coerces, Taiwan does not comply, and
China does not punish Taiwan)

O5: (Taiwan liberalizes trade, China coerces, Taiwan does not comply, and
China punishes Taiwan)

[Figure 1 about here]

Taiwan and China's preferences over these outcomes vary depending upon each of their types. We say that a player is economics-first if it prefers economic welfare gains to securing its political objectives. On the other hand, a player is politics-first if it is willing to sacrifice gains from trade for its political goals. Regardless of its type, it is assumed that Taiwan most prefers to obtain both its economic and politics goals. Thus, Taiwan's first choice is to have gains from trade and peace with China (although a politics-first Taiwan prefers peace as a result of having China back down from its threat (O4) while an economics-first Taiwan would prefer not to be coerced by China in the first place (O2)). The major difference between an economics- and politics-first Taiwan is how each responds to an anticipated conflict with China. An economics-first Taiwan prefers to concede when coerced rather than restrict trade and lose gains from trade (O3). This, however, is a politics-first Taiwan's least preferred outcome, for, if it perceives that it is likely to be coerced by China, it would rather restrict trade (O1) than have a politics-first China coerce and then punish it (O5), but it would prefer to fight and lose on the political issue (O5) than to acquiesce willingly when coerced (O3).

Taiwan's preference rankings organized by type are as follows (preferences over outcomes are ranked from 1-5, 1 being the most preferred and 5 being the least-preferred):

	Taiwan	
	Economy First	Politics First
O1	a4	b3
O2	a1	b2
O3	a3	b5
O4	a2	b1
O5	a5	b4

China's preferences over the game's possible outcomes also depend upon its type. It is assumed that regardless of its type, China, like Taiwan, most prefers to have both economic and political gains. Thus, China's top choice is to trade with Taiwan while Taiwan concedes on the political issue (O3). The major difference between a politics- and economics-first China is how each responds when Taiwan does not back down when coerced. Under these circumstances, a politics-first China prefers to escalate a conflict (O5) to not coercing Taiwan at all in the first place (O2). An economics-first China, on the other hand, least prefers full conflict (O5) because it would rather secure gains from trade and peace, even if it has to back away from its threat (O4). A politics-first China least prefers this outcome (O4) because gains from trade come at too high a political cost.

China's preferences rankings are, therefore, as follows (preferences over outcomes are ranked from 1-5, 1 being the most preferred and 5 being the least-preferred):

	China	
	Politics First	Economy First
O1	X4	y4
O2	X3	y2
O3	X1	y1
O4	X5	y3
O5	X2	y5

Figure 2 represents the extended form version of the interaction sequence in figure 1 under conditions of incomplete information about both players' types. Given the sequence of moves for the game and the players' preferences over outcomes, we can evaluate the extended form version of the game to see if dominated actions can be eliminated. (See Figure 2).

[Figure 2 about here]

The extended form version shows that a politics-first China will always coerce and then punish if given the chance, but an economics-first China will never punish if Taiwan refuses to comply. A politics-first Taiwan will not comply if coerced, but an economics-first Taiwan will comply. Now, solving for the game we see that it results in three pure strategy Nash equilibria: (E1) $\{(llc \sim c), (ccp \sim p)\}$, (E2) $\{(lrc \sim c), (ccp \sim p)\}$, and (E3) $\{(llc \sim c), (c \sim cp \sim p)\}$, where l means liberalize, r restrict, c coerce, and p punish.

E1 is a pooling equilibrium. It means that Taiwan will liberalize trade regardless of its type, even if it is politics first. And, China will coerce always, even if it is economics-first. For E1 to be a viable equilibrium strategy solution, the following inequalities must be satisfied:

$$(1) \quad (q)b4 + (1-q)b1 > b3; \text{ and}$$

$$(2) \quad (p)y1 + (1-p)y3 > y2,$$

where q is the probability that China is politics-first, p is the probability that Taiwan is economics-first, and the variables represent players' outcomes (i.e, $b1$, $b3$, and $b4$ represent a politics-first Taiwan getting its first, third, and fourth most preferred outcomes respectively, and $y1$, $y2$, and $y3$ represent an economics-first China obtaining its first, second, and third most preferred outcomes respectively).

From equation (1) we see that a politics-first Taiwan will prefer trade with China if (a) Taiwan perceives that China is more likely to be economics-first (the value of q is low), (b) Taiwan's utility derived from cross-strait trade is higher than its utility from the

status quo ($b1-b3$ is high), and (c) Taiwan experiences little economic harm if China chooses to punish Taiwan ($b3-b4$ is low).

Equation (2) implies that an economics-first China will coerce Taiwan when (a) it perceives that Taiwan is more likely to be economics-first (the value of p is high), (b) the utility derived from attaining political concessions from Taiwan outweighs China's gains from cross-strait trade ($y1-y2$ is high), and (c) China does not suffer a high cost if Taiwan chooses not to comply and China does not punish Taiwan ($y2-y3$ is low).

If the foregoing conditions are met, then E1 is the equilibrium solution. There are, in equilibrium, three possible outcomes that can be inferred from the strategy pairs of E1. The first possible outcome is that Taiwan will always choose a liberal trade policy (Taiwan is economics-first), and, if coerced, it may make political concessions to China. The second possible outcome is that Taiwan may refuse to comply with China when coerced, and China may choose to punish Taiwan (both Taiwan and China are politics-first). Finally, Taiwan may refuse to comply when coerced, but China may choose not to punish Taiwan when it does not comply with China (Taiwan may be politics first while China is economics first).

E2 is a separating equilibrium, which implies that Taiwan will liberalize trade when it is economics-first but will restrict trade when it is politics-first. China's strategy remains unchanged from E1 – it will coerce, even if it is economics-first. For E2 to be a viable equilibrium, the following inequality must be satisfied:

$$(3) \quad (q)b4+(1-q)b1 < b3.$$

Equation (3) shows that in order for an economics-first Taiwan to prefer liberalization and a politics-first Taiwan to prefer trade restrictions, (a) Taiwan must perceive China to

be more likely to be politics-first (q is high), (b) profits from trade are not high ($b_1 - b_3$ is low), and (c) China's punishment can seriously harm Taiwan ($b_3 - b_4$ is high). The strategy profile for E2 implies that either Taiwan is economics-first and complies with China when coerced or Taiwan is politics-first and chooses the perpetuation of the status quo (O1).

E3 is another separating equilibrium, because although Taiwan will liberalize trade even if it is politics first, China will only coerce if it is politics-first. For E3 to be the game's equilibrium outcome, the following inequalities must be satisfied.

$$(4) \quad qb_4 + (1-q)b_2 > b_3; \text{ and}$$

$$(5) \quad (p)y_1 + (1-p)y_3 < y_2.$$

From equation (4) we see that, in equilibrium, Taiwan will always choose liberalization over trade restrictions when (a) it perceives that China is more likely to be economics-first (the value of q is low), (b) trade profits are high ($b_2 - b_3$ is high), and (c) Taiwan experiences little economic harm if China chooses to punish Taiwan ($b_3 - b_4$ is low).

Equation (5) implies that an economics-first China will not coerce and a politics-first China will coerce if (a) China perceives that Taiwan is more likely to be politics-first (p is low), (b) there is little gain from attaining a political concession from Taiwan ($y_1 - y_2$ is low), and (c) China suffers a high cost if it chooses not to punish Taiwan when Taiwan does not comply.

If these conditions are met, then E3 is the equilibrium solution and one of the four following outcomes may obtain. One possible outcome is that Taiwan liberalizes and China does not coerce, thus revealing China to be economics-first. China may instead

choose to coerce and an economics-first Taiwan may make the political concessions necessary to maintain cross-strait trade. Alternatively, a politics-first Taiwan may elect not to comply with China's demands, and a politics-first China may choose to punish Taiwan. Finally, an economics-first China may decide not to punish a politics-first Taiwan for not complying.

As indicated, two of these three equilibria are separating equilibria. In one, Taiwan will restrict trade only if it is politics-first; in the other, China will coerce only if it is politics-first. The other equilibrium is a pooling equilibrium, in which Taiwan will always liberalize trade, even if it is politics-first, and China will always coerce, even if it is economics-first. If, therefore, Taiwan ever decides to restrict trade, it reveals its type to be politics-first. And, if China ever chooses not to coerce, then it reveals itself to be economics-first.

The game model implies the possibility of certain outcomes being realized in equilibrium. As the first mover, Taiwan can choose whether to continue implementing trade restrictions or whether to liberalize trade with China. As implied by the conditions derived from the equilibrium results, Taiwan's decision is both a function of its own type and its perception of China's type. Taiwan will be more likely to choose to restrict trade if it is politics-first and if it perceives that the likelihood of China being politics-first is high, its profits from trade are not high, or China's punishment can seriously harm Taiwan. This makes practical sense, because if Taiwan is politics-first and it believes that China is likely to initiate a conflict, then Taiwan will prefer to incur the cost of lost trade than to allow itself to become economically vulnerable. Once Taiwan chooses to restrict trade, then China knows that Taiwan is politics-first, and it can update its beliefs

about Taiwan's type. If, however, Taiwan is not politics-first or if it believes that China is likely to be economics-first, then Taiwan will prefer liberalized trade to restricted trade. That is, if Taiwan values economic gains above security, then it will liberalize trade even if it believes that there is a high likelihood that China seeks unification. Additionally, even if Taiwan puts political ahead of economic goals, it will prefer to liberalize trade as long as it believes that China is likely to be economics-first.

If Taiwan chooses to liberalize trade, then China decides whether or not to coerce Taiwan. China's decision to coerce is a function of its own type and its perception of Taiwan's type. China will choose not to coerce if it is economics-first and if it perceives that the likelihood of Taiwan being politics-first is high. This also makes sense, because China prefers not to coerce Taiwan in the first place if doing so means that it will likely end up not punishing a non-compliant Taiwan. If China chooses not to coerce, then Taiwan knows that China is economics-first and, therefore, can update its beliefs about China's type correspondingly. China will coerce Taiwan, however, if it is either politics-first or if it perceives that there is a high likelihood that Taiwan is economics-first. That is, if China values unification above any of the benefits of cross-strait trade, then it will coerce Taiwan whether it believes Taiwan to be economics- or politics-first. Furthermore, even if China is economics-first, it is still possible that it may choose to coerce if it believes that Taiwan is likely to comply when coerced.

Unlike the first two moves of the game, the moves following China's decision to coerce depend solely upon each player's type. That is, the choices to comply and to punish are, as we have seen, determined by dominated strategies. Taiwan will only make concessions if it is economics-first, and only a politics-first China will punish a non-

compliant Taiwan. This means that Taiwan will never comply with China's coercive threats if it is politics-first. If China is politics-first, then it will always choose to enforce its demands with a punishment if Taiwan decides not to comply with China's threats. On the other hand, an economics-first China will not punish a non-compliant Taiwan. Thus, O5 should only result when misperception occurs, for a politics-first Taiwan will not liberalize trade and risk the escalation of a conflict unless it perceives that China is economics-first and, therefore, unlikely to coerce. And, China will only coerce if it is politics-first, in which case Taiwan is unlikely to have liberalized trade in the first place, or if it perceives that Taiwan is economics-first and, therefore likely to comply when coerced.

Much of the discussion in the present analysis relies upon the China-Taiwan case. However, the case of China and Taiwan merely serves as inspiration for the study, because it provides a dynamic example of a strategic trade-conflict interaction and also poses as a counterexample to prevailing trade-conflict theory. Thus, although the model is based upon the China-Taiwan case, we observe that trade-conflict interactions generally are determined by considerations not only of decision-theoretic maximization of economic and political utility, but also of players' anticipation of their opponents' unknown preferences. Moreover, the move sequence modeled herein reflects the general trade-conflict interaction that we would expect to reflect the behavior of states facing decisions involving political and economic tradeoffs. Thus, we would expect the results from our model to apply generally to other cases of trade and conflict.

III. Discussion

Building on the intuition offered by Albert Hirschman that states may choose to link trade with economic and/or political goals, we have developed a game-theoretic model that captures the strategic interaction between two players who are trying simultaneously to maximize economic and political gains under conditions of uncertainty about their opponents' preferences. From the model we can derive the following main results.

First, states may coerce even if their type is economics-first. That is, if it perceives that its trade partner's political resolve is low, a state who prefers gains from trade to its political goals may nevertheless choose to initiate a conflict with its trade partner in order to try to win its political as well as its economic objectives. However, this finding is inconsistent with the liberal position, which claims that states' drive to maximize absolute gains leads to peaceful interstate relations. Thus, the model, therefore, predicts that, contrary to the liberal position, political exploitation and skirmishes will likely occur when an economics-first coercer perceives that its opponent is also economics-first and, therefore, likely to concede on a disputed political issue.

The second finding implied by the model is that states may trade even if their type is politics-first. If politically resolute states perceive that their opponent is politically weak, then they will likely trade with their opponent to try to secure both political and economic gains. This type of situation may correspond to the relationship presently unfolding in the Taiwan Strait where a politics-first Taiwan is considering relaxing trade restrictions with its arch-political adversary. In one respect, this finding illuminates a short-coming in the realist position, because, according to realists, determinations to trade

with the enemy depend upon how much states perceive gains from trade will increase the security threat to one's own state. Our model shows that predominantly security-conscious states may trade with the enemy even if gains from trade favor the enemy.

Third, economics-first target states have an incentive to misrepresent their types. If states that are likely to be coerced can convince potential trade partners that they will not back down when coerced even at the risk of interrupting trade flows, then they can likely carry on a trade relationship with an enemy without being coerced. The China-Taiwan case illustrates this result. Taiwan has an incentive to convince China that it is politics-first, since an economics-first China will avoid coercing a politics-first Taiwan. The model's separating equilibrium shows that only a politics-first Taiwan will restrict trade, which President Lee did during his administration. Consequently, once President Chen Shui-bian and the Democratic Progressive Party, which is assumed to be at least as politics-first as Lee's Kuomintang party, came to power in 2000, the new government could benefit from the reputation established by the actions of the previous administration. Thus, the present Taiwan government, which China likely believes is politics-first, can consider liberalizing trade with China if it perceives that China is economics-first. Indeed, relaxing cross-strait travel, communication, and trade restrictions has been one of the items that the Chen administration has been discussing.

Finally, a politics-first coercer state has an incentive to misrepresent its type to convince a potential target that it is economics-first. Because a target state will likely not trade or will restrict trade flows if it is worried about the security threat posed by the coercer more than it values the gains from trade, a coercer has an incentive to convince its opponent that it is economics-first, even if it is really politics-first. Moreover,

contrary to the realist view that resolute political adversaries will only trade under certain conditions, the coercer always wants to induce the target to trade even if both are politics-first, because the coercer prefers to coerce and then punish the target over the status quo. However, if a target decides to liberalize trade with the coercer, the coercer does not know if liberalization occurred because the target is economics-first or because the coercer successfully convinced the target that it is economics-first. Full-scale conflict can occur if the target misperceives that the target is economics-first when it is actually politics-first. Thus, contrary to the liberal position, conflict can occur between trading states.

China's interest in convincing Taiwan that it is economics-first demonstrates this final point. Because China only gets a move if Taiwan liberalizes trade, China has an incentive to convince Taiwan that it is economics-first to induce Taiwan to relax existing trade restrictions. If Taiwan believes that China is likely to be economics-first, then even a politics-first Taiwan will be encouraged to liberalize trade in order to achieve simultaneously economic and political gains. This results in a win-win situation for China, for if it is actually economics-first, then it can trade with Taiwan, which, for China, is an improvement over the status quo. And, if China is politics-first, then Taiwan's misperception plays to China's advantage, because it can coerce and punish Taiwan in order to achieve political victory, which China also prefers to the status quo.

In fact, China has, in recent months, begun to adjust its Taiwan policy in a way that appears to encourage Taiwan to liberalize cross-strait trade. In a series of recent announcements, China has declared that it no longer insists that Taiwan concede to the

“one China” principle before cross-strait trade can be liberalized.¹² Delinking trade from the political issue constitutes a significant disclosure about China’s type: either China is economics-first or it is politics-first but is trying to convince Taiwan that it is economics-first.

¹² China’s Qian: Links Talks With Taiwan Purely Econ Issue, Associated Press, Oct. 17, 2002.

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Figure 1
Sequence of Moves between Taiwan and China

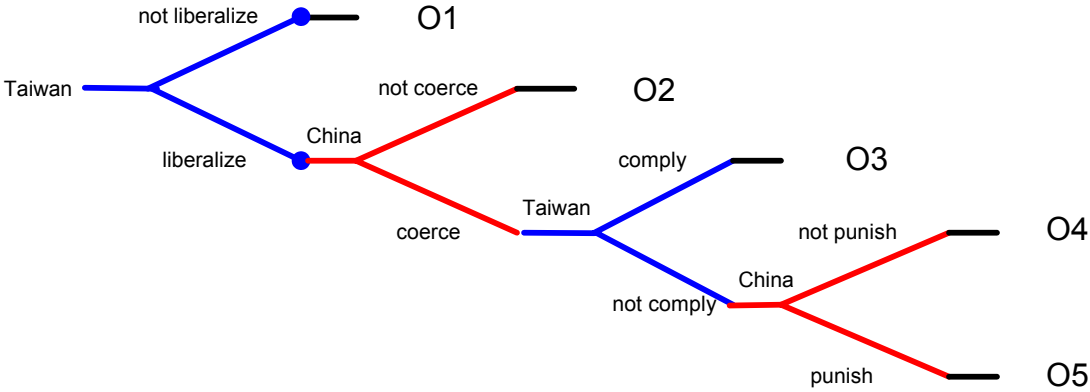


Figure 2

An Extensive-Form Game of Trade and Security

